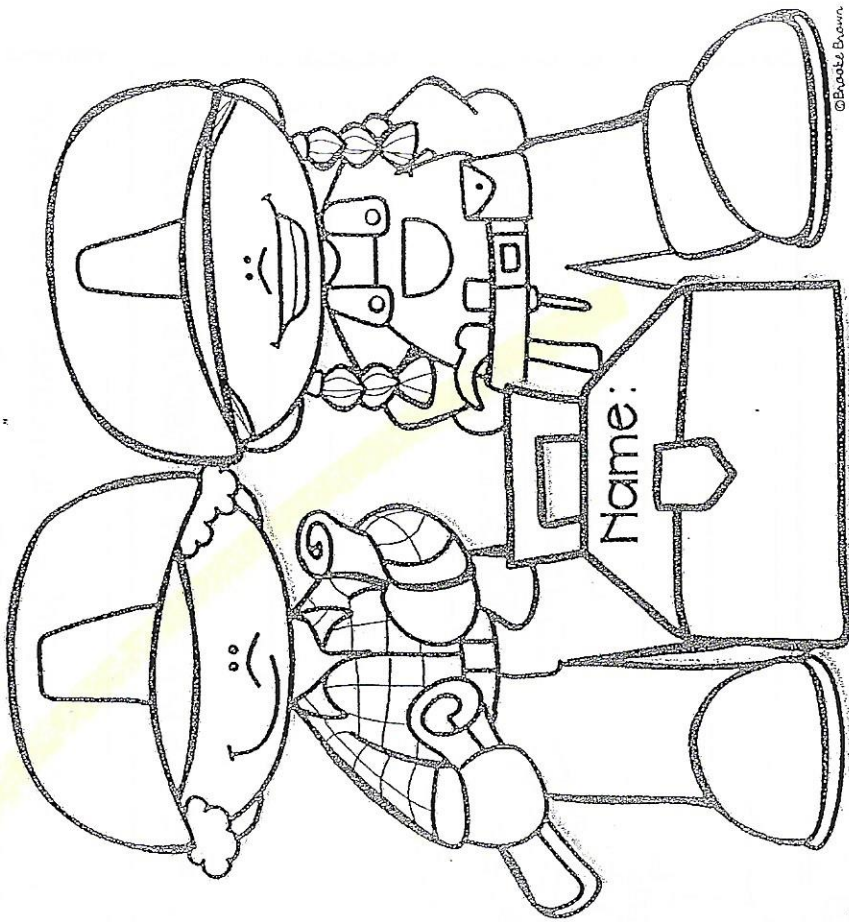


My Fifth Grade

STEEM Journal



PLANT ESSENTIALS

Name: _____

THE CHALLENGE

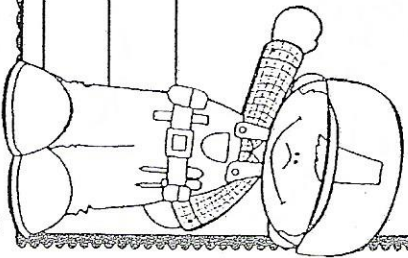
Can you conduct a controlled experiment to determine which factors are most essential for plant growth?

What do plants need to grow?

1. _____
2. _____
3. _____
4. _____

MY HYPOTHESES:

Which factor or factors are MOST important for plant growth?



INSTRUCTIONS

Plant 1: NO WATER

1. Fill the baggie or box $\frac{1}{3}$ full with soil.
2. Push 2-3 beans down into the soil.
3. If you're using a baggie, make sure that it is open halfway the top.
4. Tape or prop your baggie or box very close to a window

Plant 2: NO AIR

1. Fill the baggie or box $\frac{1}{3}$ full with soil.
2. Push 2-3 beans down into the soil.
3. If you're using a baggie, seal it closed. If you're using a box, wrap around it very tightly with plastic wrap to seal out the air.
4. Tape or prop your baggie or box very close to a window
5. Make sure to water your plant daily by giving it 2-3 squirts.

Plant 2: NO SOIL

1. Put 2-3 beans inside the baggie or box.
2. Soak a wet paper towel and fold it into a small rectangle. Place the paper towel inside the baggie or box.
3. If you're using a baggie, make sure that it is open halfway at the top.
4. Tape or prop your baggie or box very close to a window.
5. Make sure to water your plant daily by giving it 2-3 squirts on the paper towel.

Plant 2: NO SUNLIGHT

1. Fill the baggie or box $\frac{1}{3}$ full with soil.
2. Push 2-3 beans down into the soil.
3. If you're using a baggie, make sure that it is open halfway at the top.
4. Place your plant inside a dark closet or cabinet.
5. Make sure to water your plant daily by giving it 2-3 squirts.



PLANT OBSERVATIONS

Date:	Observations
Plant 1	
Plant 2	
Plant 3	
Plant 4	
Date:	Observations
Plant 1	
Plant 2	
Plant 3	
Plant 4	

Final observations

Plant 1	
Plant 2	
Plant 3	
Plant 4	

What are the factors that are MOST important for plant growth and WHY?



Plant Observations

Date:	Observations
Plant 1	
Plant 2	
Plant 3	
Plant 4	
Date:	Observations
Plant 1	
Plant 2	
Plant 3	
Plant 4	

©Baracke Brown

Parachute Tests

TEST	TIME	Did the basket land upright?
1		
2		
3		
4		

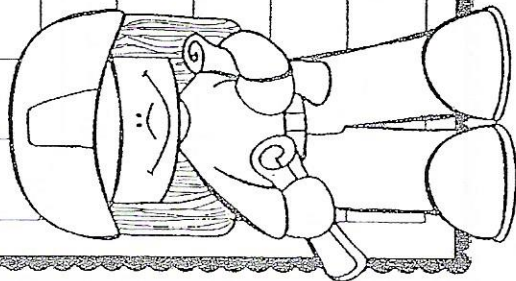
How did the design of your parachute reduce gravitational pull?



©Baracke Brown

My parachute

Don't forget to label the parts!



Plant observations

Date:	Observations
Plant 1	
Plant 2	
Plant 3	
Plant 4	

Date:	Observations
Plant 1	
Plant 2	
Plant 3	
Plant 4	

EARTH IN A BOTTLE

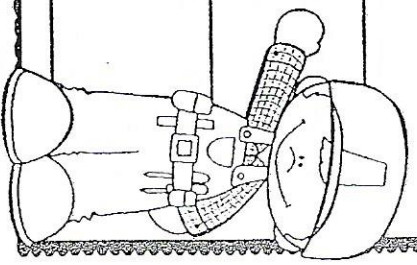
Name: _____

THE CHALLENGE

Can you construct a model to represent Earth's four systems?

What are Earth's systems?

1. _____
2. _____
3. _____
4. _____



©Brooke Brown

Heavy and Light Test

Choose 3 pairs of school supplies that will not break if dropped. Drop two supplies from the same height at the same time and record your observations.

Supply 1	Supply 2	Which Supply Landed First?

_____ and _____ do NOT affect gravitational pull.

Gravitational pull is affected by _____ and _____.

Air resistance, or _____, will slow down the drop of the parachute.

2

©Brooke Brown

PERFECT PARACHUTE

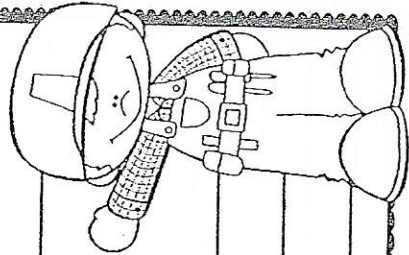
Name: _____

THE CHALLENGE

Can you design a parachute with basket that will drop in the slowest amount of time and land upright?

What is gravity?

Examples of objects That Fall slowly



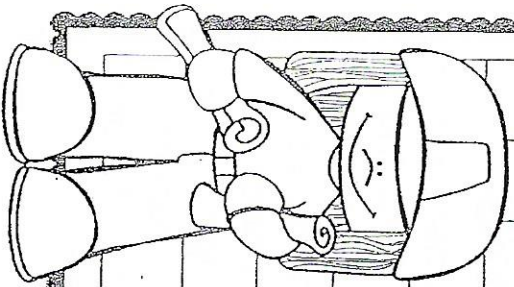
Describe Earth's systems.

System	Description

INSTRUCTIONS

Cut the top section off of your plastic bottle.
Go on a nature walk to gather items that represent the different systems of the Earth.
Layer the items that you find inside your bottle. You may also make paper representations of animals to tape on the outside of the bottle. Use permanent markers on the outside of the bottle to label the four different systems.

Earth in a Bottle



©Bye Bye Brown

Tests

Test	Distance to nearest centimeter
1	
2	
3	
4	

one thing that was easy:

one thing that was challenging:

one thing that I improved:

©Bye Bye Brown

SHADOW CLOCK

Name: _____

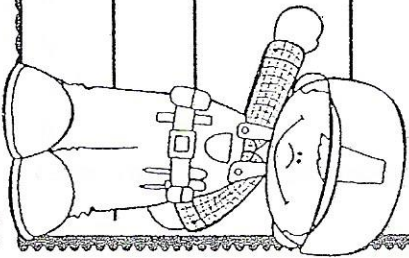
THE CHALLENGE

Can you create a shadow clock that tracks the movement of the sun in the sky?

HOW DOES THE EARTH MOVE?

1 _____

2 _____



©Bryette Brown

HOW AIR CAN BE USED AS A FORM OF ENERGY

HOW MY BALLOON CAR USES AIR AS A FORM OF ENERGY

INSTRUCTIONS

1. Cut the Solo cup in half lengthwise.
2. Use the hole puncher to poke four holes in the sides of the bottle (two on each side) very close to the bottom of the cup.
3. Cut two straws in half, then slide them horizontally through the holes to make the axles.
4. Break about 1/3 of each wooden skewer off, then slide the remaining pieces inside the straws.
5. Slide the four Lifesavers around each skewer as wheels.
6. Wrap tape around the skewers on both sides of the Lifesavers to keep them from falling off, but make sure that the wheels can still turn freely.
7. Test your car by pushing it and make improvements as necessary. Make sure that your car rolls easily.
8. To create the jet, put the long end of a flexible straw into a deflated balloon. Use a rubber band to attach the straw to the balloon so that no air can escape.
9. Poke a hole in the top of the cup near the base and insert the jet so that the balloon comes out the top and the straw comes out the open part on the back. Make sure that the straw is at a slight angle and the end is parallel to the table, NOT pointing upward or downward. Blow in end of the straw to expand the balloon to its full capacity. Then let go to propel the car.

2

©Bryette Brown

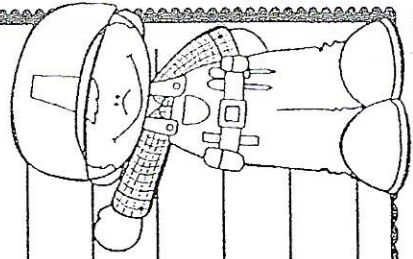
BALLOON CAR

Name: _____

THE CHALLENGE

Can you create a car that is propelled by the air inside of a balloon?

Examples of Air particles that cannot be seen



©Bridget Brown

shadow observations

Time	Shadow Measurement	Observations

©Bridget Brown

